SCIENTIFIC AMERICAN.

THE ADVOCATE OF INDUSTRY AND ENTERPRISE, AND JOURNAL OF MECHANICAL AND OTHER IMPROVEMENTS.

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THE SCIENTIFIC AMERICAN,
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(The Principal Office being at New York,)

By RUFUS PORTER.

Each number of this paper is furnished with from two to five ORIGINAL ENGRAVINGS, many of them elegant, and illustrative of NEW INVENTIONS, SCIENTIFIC PRINCIPLES, and CURIOSITIES; and contains as much Interesting Intelligence as six ordinary daily papers, consisting of notices of the progress of Mechanical and other Scientific Improvements,—American and Foreign Inventions Catalogues of American Patents,—Scientific Essays, illustrative of the principles of the Sciences of MECHANICS, CHEMISTRY, and ARCHITECTURE;—Instruction in various Arts and Trades;—Curious Philosophical Expements;—Miscellaneous Intelligence, Poetry and, occasionally, Music.

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TERMS OF ADVERTISING.—For 10 lines, or less, 50 cents for the first, and 12 1-2 cents for every subsequent nsertion.

A Nocturnal Sketch.

"Even is come, and from the dark park, hark
The signal of the setting sun—one gun!
And six is sounding from the chime, prime time
To go and see the Drury Lane Dane slain,
Or hear Othello's jealous doubt spout out;
Denying to his frantic clutch much touch;
Or else to see Ducrow with wide stride ride
Four horses, as no other man can span;
Or in the small Olympic pit sit split
Laughing at Liston, while you qniz his phiz.

"Anon night comes, and with her wings brings things
Such as, with his poetic tongue, Young sung;
The gas up blazes with its bright, white light,
And paralytic watchmen prowl, howl, growl,
About the streets and take up Pal Mal Sal,
Who, trusting in her nightly jobs, robs fobs.

Now thieves enter for your cash, smash, crash,
Past Drowsy Charley, in deep sleep creep,
But frightened by Policeman B, 3, flee,
And while they're going, whisper low, 'no go.'
Now puss, while folks are in their beds, treads, leads,
And sleepers waking, grumble, 'Drat that cat!'
Who in the gutter catterwauls, squalls, mauls
Some feline foe, and screams in shrill ill-will.

"Now bulls of Bashan, of a prize size rise
In childish dreams, and with a roar gore poor
Georgy, or Charles, or Billy, willy nilly
But nurse-maid in a night-mare rest, chest pressed,
Dreameth of one of her old flames, James Games,
And that she hears—what faith in man's!—Ann's banns,
And its from Reverend Mr. Rice, twice, thrice,
White ribbons flourish, and a stout shout out,
That upward goes shows Rose knows those beaux, woes!"

Be Active

Be active—be active—
Find something to do,
In digging a clam-bank,
Or tapping a shoe.
Don't stop at the corners,
To dig out the day—
Be active—be active—
And work while you may.

'Tis foolish to falter,
Or lag in the street—
Or walk as if chain-shot
Were bound to your feet.
Be active—be active—
And do what you can;
'Tis industry only
That maketh the man.

'Tis industry makes you—
Remember—be wise—
From sloth and from stupor
Awake and arise.
You'll live and be happy,
And never complain
Of the blues, or the dumps,
Or a dull, heavy brain.

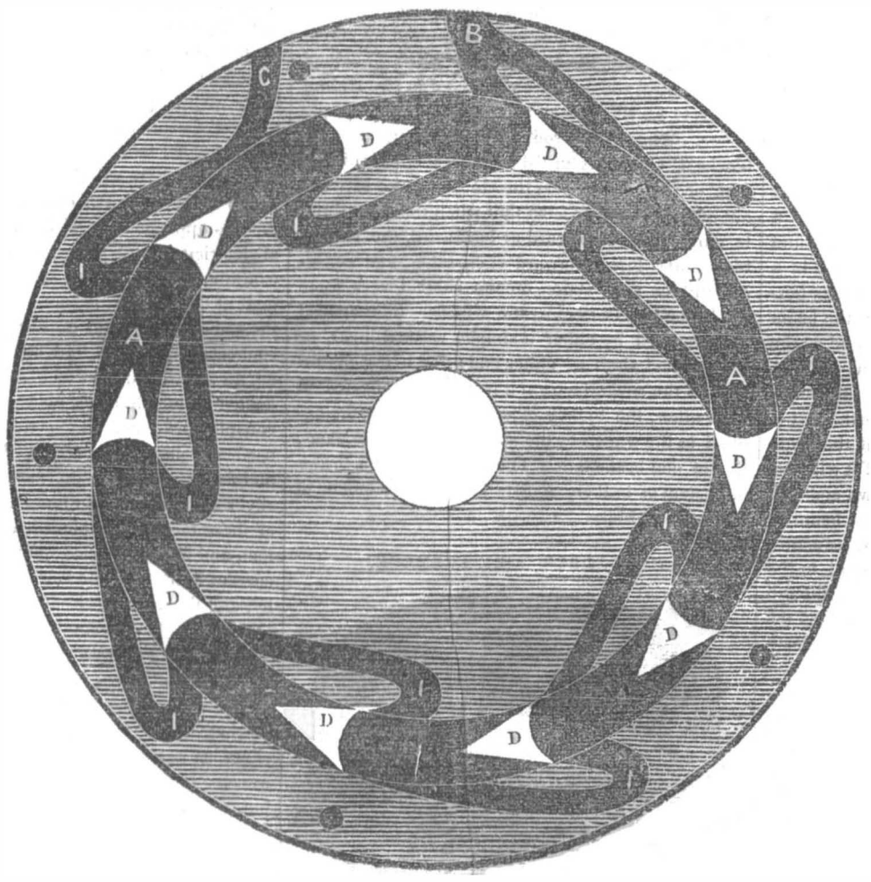
THE SMOKERS.

(The smallest song in the world.)
Author Unknown.

"We three
Brothers be
In one cause;
Bill puffs,
Tom snuffs,
And I chaws."

LOCUSTS.—Myriads of these insects extend 30 or 40 miles north and south, in Tennessee. A writer in the Memphis Eagle indulges in no apprehensions of injury to the crops. The locust, says he, never eats after it emerges from the ground. "It lives on its own song, a short though merry life, of about two weeks; that is, about two weeks after they appear, some may be seen dead. They gradually disappear, leaving their eggs deposited in the tender limbs of trees, of the current year's growth; the eggs hatch a worm, which falls to the ground, and disappears for *thirteen years*, when it rises again, a locust. Where it goes, what it eats, what forms it assumes, during these thirteen years, is unknown; though they rise where they fell."

ROTARY ENGINE.



INTRODUCTION.—Having been favored with a drawing and description of this invention, and having nothing better in readiness for this number, we present it to our readers, though we cannot say that we see so much excellence in the plan as we had hoped to find. It was invented and recently patented by Mr. James Black, of Philadelphia, whose confidence in its utility has probably been based on apparent theory, rather than experiment.

EXPLANATION.—In the engraving is shown a sectional view of the interior of the engine, and represents the disc of a stationary wheel in which is a circular channel, A A, into which steam is admitted through the induction pipe, B, and is discharged through the exhaust pipe, C. A series of revolving pistons, D D, &c., are fitted to the circular groove or channel, and are attached to a wheel, which revolves in contact with the stationary disc, and from which the motion and power of the steam-wheel is communicated to whatever machinery is to be driven thereby. There is a series of "lateral steam passages," II &c., on each side of the circular channel, through which the steam passes from each interval in the channel to the next beyond; thus progressing through nearly the whole circle to the exhaust pipe, and acting by its momentum on the concave head of each piston in its progress. It is not difficut to calculate—having the size and number of the pistons, and the density of the steam given—the amount of force exerted on the series of pistons, which will amount to from one-fourth to one half of the whole available power of the steam expended.

THE CAT WILL PLAY AND AFTER SLAY.—We were reminded of this catechism saw, by a queer story of a fox told by a correspondent of the Concord Freeman:

'A few days since while passing near a piece of wood, my attention was suddenly arrested, at hearing the piteous cry of a young lamb, apparently but a few rods distant. My curiosity being somewhat excited, I repaired near the place from whence the sound came, to learn its cause. Advancing some ten rods, I beheld through a thicket, some twenty feet ahead, a young lamb, surrounded by four foxes, one old one with three young ones. The mother, while the young ones were playing their pranks, would set back some four feet and look upon the scene before her with deep interest. The little ones would form a ring around the lamb, then one would walk up to lamb and put its arms around its neck, (which would cause it to bleat most piteously) 'hug' it very closely, and go through all manner of manœuvres, while the other two, if the lamb was like to get the better of him, would lend him their aid. Thus they played, taking their regular turns for the space of two hours; when suddenly, the mother sprung from her seat, caught the lamb, and would have devoured it, had not my feelings of pleasure and curiosity been suddenly changed to pity and sympathy, and rescued the little frightened sufferer from its foe.

BOTANY.—The study of this beautiful science is particularly adapted to young ladies, to whom we would recommend it as a lasting source of pleasure and amusement. It will be found much less difficult than may at first be apprehended, and the enjoyment experienced in its progress will be such, that difficulties much greater than those which really present themselves, would be no barrier to the attainment of the science. The nomenclature, which appears at first view so repulsive, soon loses its terrors, and becomes familiar, and the pleasures which result from the application of principles, the exercise which this science requires, and the perpetual contemplation of the variegated and splendid colorings of nature, operate as a species of attraction so irresistible, that the student can neither resist nor control it. No object can be more delightful than to behold a lovely woman indulging a passion for that which is in itself so beautiful and innocent, or than to see her "Looking through Nature, up to Nature's God." What higher source of gratification can there be than to stroll amidst the groves, or wander over mountain heights, and enjoy the magnificent scenery of nature, and inhale the breeze teeming with fragrance, and redolent with sweets, while you are in pursuit of a richer banquet, a more delightful spectacle, the fair and exquisite gifts of Flora.

LAWS OF HUMBUG.—There is a law requiring a licence fee of $500 from our theatres. If the business is right, why should a theatre pay more than a dry goods store? If wrong, why allow them at all? It is a rascally imposition, either way.

ORANGE SYRUP.—This syrup is so easily made, and can be so constantly used to advantage, that no housekeeper should be without it. Select ripe and thin skinned fruit; squeeze the juice through a sieve; to every pint add one and a half pounds of powdered sugar; boil it slowly and skim as long as any scum rises; you may then take it off, let it grow cold and bottle it. Two table-spoonsfull of this syrup, mixed in melted butter, make an admirable sauce for plum or batter pudding. It imparts a fine flavor, and three table-spoons to a glass of ice-water makes a very pleasant summer beverage. Be sure and cork the bottles well, and put them away in a refrigerator or some very cool place that they may not ferment.

A ROSE TREE.—To understand what is meant by "a rose tree in full bearing," we have only to see one in the garden of our townsman, Judge Banks. This magnificent tree is thirty feet high, twenty-five feet wide, and about ten feet through. It covers an area of five hundred square feet on the wall, and fills the air with the perfume of thousands, we might perhaps say millions, of roses. Near it stands another rose bush of a different species, not much inferior in size.—*Reading Jour.*

TO DESTROY ROACHES.—Take six cents worth of Orange Mineral, (an oxyde of lead) mix it with molasses till it becomes of the consistence of paste. Spread the paste on small pieces of pasteboard—lay these about the infested places in the evening; the roaches eat freely and die, at all events many die, and shortly the rest disappear, not to return.—This is a sure destruction for these abominable pests.

CEMENT FOR COPINGS, &c.—In the sugar making Islands of the West Indies, they make a most valuable cement, which is quite impervious to water by mixing with lime, *ashes* of the *cane stems*, after the sugar has been all expressed. As the virtue of these ashes consists principally in the silex, which is found in the cane stems, why might not our farmers who are often in want of such a cement use the ashes of the Indian corn stalks, where also, an abundance of that earth is known to exist.

TO BE PROMOTED.—Corporal O'Sullivan, in the midst of the late battle, after firing at a company of the enemy, rushed in upon them, seized a lieutenant by the collar, disarmed him, and delivered him a prisoner to Lieut. Graham. He also captured a cannon from the enemy, rolled it out in the road, and turned it over to an officer of the 5th infantry. Napoleon would have promoted him on the field.

CALL OF THE ROLL.—The amount of volunteers to be called into *immediate* service is 17,153. The amount to be in readiness at 24 hours' notice is 28 full regiments, or 24,436. The whole number to be enrolled is 43,649, of which 37,704 foot, and 3,945 horse. If this force is added to the regular force now in service, it will amount to 60,000 men,

ELECTRICITY.—A correspondent of the Morning Journal states his opinion that the simultaneous and instantaneous ignition of gas lamps in cities and towns by means of electricity, will ere long be substituted for the present slow and irregular method. He further states, "I confess that I am astonished that electricity has never been enlisted into the service of the *steam engine*, when every sound reflecting mind and clear intellect must perceive that it must ultimately do away with the present employment of fuel and boilers, and their auxiliaries. I have no pretensions to the vision of the prophetic vista, when I venture to predict that the time is not far distant when the globe will be circumnavigated by the agency of electricity."

POPERY AND PROTESTANTISM.—It was stated at the late anniversary of the London Protestant Society as a singular fact, that while Popery was increasing in England, large numbers of both priests and lay members of the Roman Catholic persuasion in France and Ireland were leaving that church and joinging the Protestants.

DONGEROUS POSITION.—A little boy about five years of age, was discovered in the Railroad tunnel yesterday afternoon, just as the cars were coming through. As there was not time for him to get out, some one hallooed to him to lie down between the rails and let the cars pass over him, but the little fellow took his own course, and hugged close to the wall, the cars just grazing him. A very narrow escape.—*Salem Advertiser.*

'PETE GUMBO—I wish to propound one interjection to you, and I axes, nigger, a cat-and-dogical solution to the problemun—why am a Taylor appointed to command de forcibles ob be Texum army ob occupashun?' 'Gib him up widout a struggle.' 'Shaw, nigger! It is to strengthen de seat ob war, to make breaches in Matamoras, an' to sew up de Mexicans.'

TABLE OF DISTANCES.—The following note of distances is not without interest at this time:—From New Orleans to Point Isabel is 802 miles by water. From New Orleans to Vera Cruz is 1500 miles. From Yucatan to the city of Mexico is 900 miles. The population of Mexico is about 180,000. The population of the whole country is about nine millions.

MEAT PRESERVED 20 YEARS.—An English paper says that a case of preserved meat, taken from the wreck of the fury which was lost in the Frozen Ocean in Captain Parry's first voyage, about twenty years since, was opened by a gentleman at Brentwood, when it was found to be as fresh as on the day it was packed, and when cooked it was excellent.

The history of the Chinese extends back to a period of 4006 years from the present time—a period of only 300 years after the flood.

ALPHABETICAL LIST OF PATENTEES FOR 1845.

(Continued from No. 39.)

J. S. Leake, and F. S. Low, assignees of Addison Low, (design.) Albany.
John F Lehr, Huntsville, Ala.
Isaiah W P Lewis, Boston.
H L B Lewis, New York.
Wm Lillie, New York.
Amos Lindsley, Canton, Me.
R F Loper, Philadelphia.
John Loudon and Thomas Shaw, New York.
Low, Chollar, & Jones, assignees of Ezra Ripley, (design,) Troy.
Robert W. Lowber, assignee of Keeland, Selden, & Ward, Rochester.
James Maclean, Philadelphia.
Joseph Magoun, East Cambridge, Mass.
Ernest Marx, New York.
Sarah P Mather, Brooklyn.
Robert Mauck, Honeyville, Va.
James Maull, Philadelphia.
Edward Maynard, Washington, D C.
Fones McCarthy, Demopolis, Ala.
Henry McCarty, Pittsburg, Pa.
Cyrus H McCormick, Rockbridge, Va.
Angus McKinnon, New York.
John Mecay, Millsborough, Pa.
Wm Mills, and Mahlon Hoar, New Athens, O.
Clark Mills, (design), Charleston, SC.
Wm L Miller, (design,) New York.
John Miner and Silas Merrick, Fallstown, Pa.
Alexander Mitchell, Belfast, Ireland.
Richard Montgomery, Waterville, NY.
James Montgomery, Memphis, Tenn.
Harvey Moore, Reedsville, NC.
D C Moorchead, New York.
Ephraim Morris, New York.
John Morrison, Newark, NJ.
Jordan L Mott, New York.
Thomas Mussey, New London, Conn.
Samuel Myers, Schenectady, NY.
James W Newberry, Kensington, Pa.
Daniel Newton, Louisville Ky.
James Nield, Taunton, Mass.
Joel G Northrop, Cortlandville, NY.
A P Norton and Morris Owen, Sangerfield, NY.
George Oates, Charleston, SC.
Chas F Oliver and G W Jackson, Lynn, Mass.
Marmaduke Osborne, New York.
Parsons J Owen, Cincinnati, O.
John Oxnard, Portland, Me.
Ezekiel Page, Barcelona, NY.
John C Palmer, East Haddam, Conn.
George Parker, Corinna, Me.
Stephen R. Parkhurst, New York.
Elias Parks, Wheatfield, NY.
Francis D Parmelee, Akron, O.
Abram Patterson, Rush, Pa.
R Peck and J W Cochrane, Attica, N Y.
John S and M Peckman, design, Utica.
Jomes Pedder, Philadelphia.
A S Pelton, Clinton Conn.
E P Penniman, design, Rochester.
Frederick Pfanner, Providence.
Phenix Manufacturing Company, assignees of Benj Slingerland, Paterson, N Y.
Leonard Phleger, Wilmington.
Moses Pierce, Norwich Conn.
Samuel Pierce, Peekskill, NY.
James Pilbrow, Tottenham, Eng.
Hiram A Pitts, Winthrop, Me.
James Plant, Washington.
Osiah Platt, Bridgeport, Conn.
Moses Pond, Boston.
John Porter, Gettysburg, Pa.
W L Potter, Clifton Park, NY.
Elijah Pratt, New York.
Christian V Queen, Peekskill, NY.
T B Quigley, and Harvey Hall, Mansfield, Ohio.
Henry Quin, New Alexandria, N J.
Andrew Ralston, West Middletown.
Samuel H Ransom, design, Albany.
Rathbone & Co., assignees of Addison Low, design, Albany.
Fowler M Ray, New York.
Horatio G Reed, Scituate, Mass.
Samuel G Reynolds, Bristol, R I.
William Richardson, Philadelphia.
John Rider, Wooster, Ohio.
Nathaniel Rider, Worcester, Mass.
Ritterbandt, Louis Antoine, London, Eng.
Seth J Roberts, Jeffersonville, Pa.
Thos A Robertson, Georgetown, D C.
Eli C Robinson, Troy.
James Robb, Lewistown, Pa.
Henry A Roe, Erie, Penn.
Thomas Kodgers, Paterson, NJ.
David B Rogers, Stafford, NY.
Calvin B Rogers, Saybrook Conn.
Benj T Roney, Attleborough, Pa.
David Root, design, Cincinnati, O.
Joel H Ross, New York.
James P Ross, Lewisburg, Pa.
James Roy & Co., Troy.
Jacob Royer, Uniontown, Md.
R D Roys, and Newall French, Detroit, Mich.
William Rowan, Belfast, Ireland.
Louis Rueckert, Baltimore.
George O. Russell, Middletown, Conn.
Samuel Rust, New York.
Paul A Sabbaton, Reading Pa.
Harvey W Sabine, Rushville, New York.
A Sanburn, Carthage, Ohio.
Wm Sanford, Cambridge, Mass.
Joseph Saxton, Washington.
George A Scherpf, New York.
C J Schirer, and T W Cross, Boston.
Schneider, Martin & Niklaus, New Orleans.
Josiah Scudder, Prattsville, New York.
Hiram H. Scoville, and Eunice Avery, administratrix of William Avery, dec., Des Plains, Ill.
Eliphalet S Scripture, Syracuse, NY.
D M Sechler, Wooster, Ohio.
George E Sellers, Cincinnati, Ohio.
James Semple, Alton, Ill.

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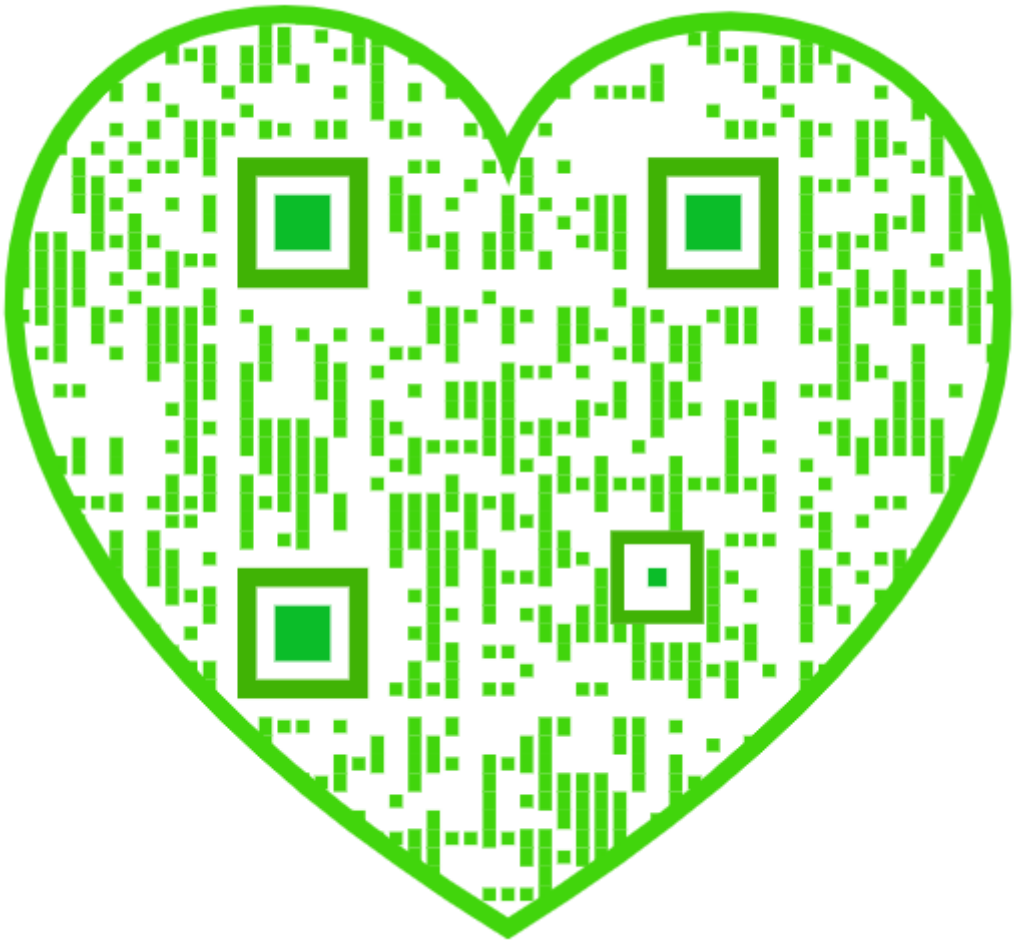
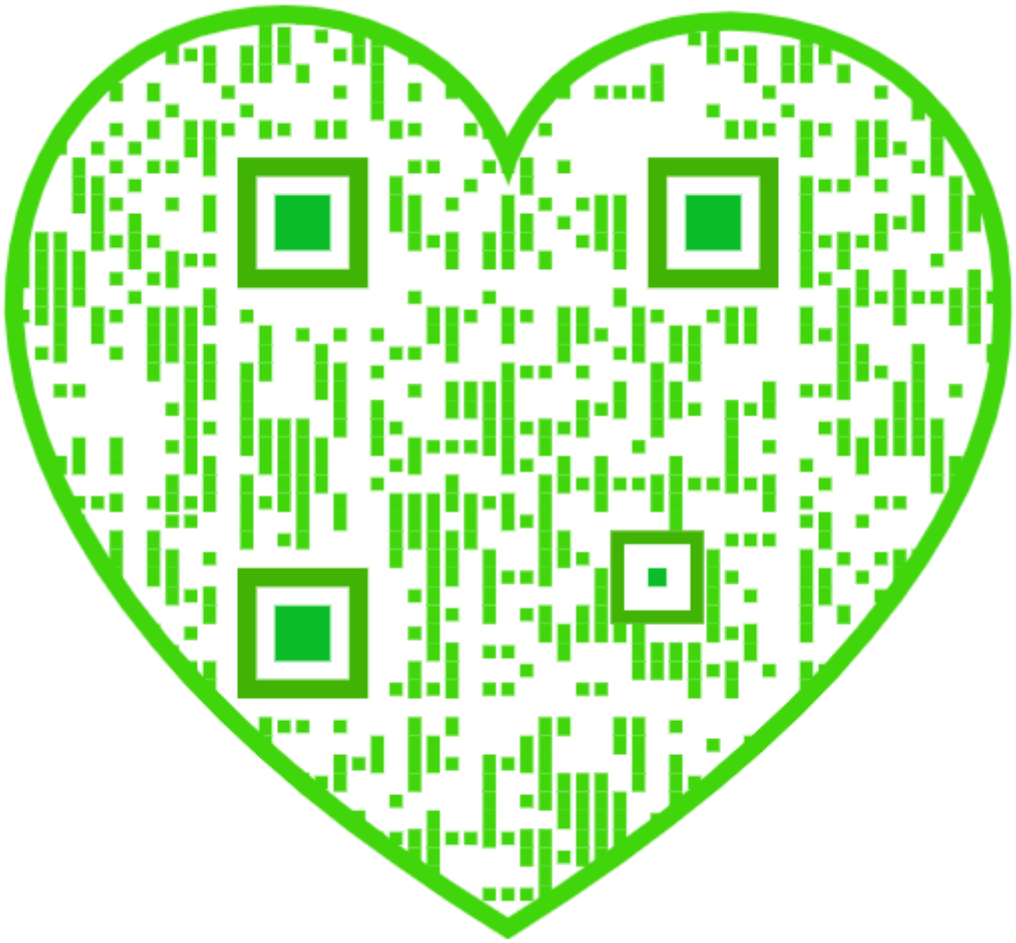




SCIENTIFIC AMERICAN

NEW-YORK, THURSDAY, JULY 2.

Drawings of machinery, engraving on wood, and lithographic drawings, neatly executed, at the lowest prices, at this office.

POST MASTERS—Who receive this paper, will confer a special favor by mentioning the subject occasionally to scientific mechanics. The aid, also, and influence of all our kind patrons, in extending the notice and circulation of this paper, is most respectfully solicited.

Independence.

On the approach of another anniversary of the Declaration of Independence of the United States, we would not omit to call the attention of our liberal minded, scientific, enterprising, and patriotic readers, to the importance and propriety of a due observance of this anniversary, by demonstrations of true patriotism, and gratitude for the series of unparallelled national blessings, of which the foundation was laid on the 4th of July 1776. Let us consider what was the situation and circumstances of this country prior to that date, and what would have been its state at the present time, if it had remained tacitly submissive to the Government of Great Britain; and draw in our minds the contrast between the state in which the country would have been under those circumstances, and what it now is. Cramped in the means of enterprise, as we should have been, with no control of the public lands, and no encouragement to undertake the manufacture of fabrics and utensils from the products of the soil for our own convenience, the population of the country would have been less than one fourth of what it is at present; and under the double-riveted restrictions against the use of fire arms, or assembling in unauthorised conventions; subjected to the vigilant inspection of a foreign military guard on one hand, and the stupifying influence of a bigoted church establishment on the other, while ignorance and its accompanying vices pervaded the community, we should have had but little chance to assume our independence or improve our condition. But what are we now, under the blessings of our free institutions? Numbering twenty-eight independent states, united in one grand confederation,—with an army of 4,500,000 citizen soldiers, independent, but united, and already accustomed to the use of arms;—with an almost boundless country of well watered and fertile soil, embracing diversity of climate, and spangled with populous cities and gay villages;—a population of twenty millions, well supplied with schools and seminaries of education; with our many thousands of miles of coast, lakes and rivers enlivened with the most superb steamers, which are more abundant than are even sailing vessels in some of the wealthy kingdoms of Europe:—with elegant trains of cars gliding with rocket speed in all directions through the country; and telegraphic lines through which general intelligence is communicated with lightning speed from one section of the union to another;—with mail facilities moving with the regularity of clock-work, and rapidly circulating through the length and breadth of the inhabited country, enlightening and equalizing the whole;—with an impartial and liberal judiciary system, and free toleration in religion;—we as a nation, are looked up to, with envy and admiration by all other nations of the earth, where there is light enough among the people to understand our position. Therefore let us remember the birth-day of our national prosperity, and encourage our children to celebrate this anniversary with as much mirth and hilarity as is consistent with safety and good morals, and to be especially liberal towards the children of the unfortunate and indigent, that all may enjoy the occasion together.

OH, WHAT A ROW!—There was probably never published in the United States a paper which had so much trouble in its circulations this, notwithstanding that we put up our papers in better style for the mails, and are more particular to see that *every* paper is plainly and correctly directed, comparing the directed papers with the books, &c., than any other publisher in this city; yet there are daily complaints of the non-receipt of the paper. The cause of this turmoil is too obvious to be questioned. In the first place, any one of our subscribers would think more of losing one copy of this paper than seven copies of the ordinary newspapers; and in the second place, there are seven times as many of them purloined from the post offices, as of any ordinary paper. We can not help it, nor remedy the evil, further than to send extra papers to supply the place of those which have been purloined.

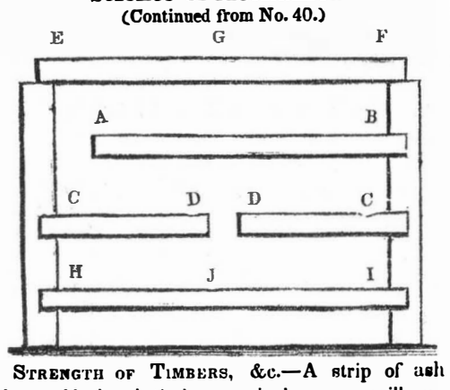
VALUABLE PURCHASE.—The Fall River Iron works Company, which has a large establishment at Fall River, Mass., including a rolling mill 412 feet long, and 100 feet wide, a nail mill 226 feet long and 44 feet wide and foundry, 24 puddling furnaces, an air furnace, and two cupola furnaces and five steam engines, has lately purchased the valuable coal mine near Cumberland, known as the Clifton property, embracing a part of the ten feet coal vein, to which a rail road has been lately opened from the Mount Savage Iron Works, connecting it, by means of the Mount Savage Railroad, with the Baltimore and Ohio Railroad. The Cumberland Civilian, from which we derive this information, says that 'the annual consumption of coal in the Fall River establishment is 17,050 tons; and of pig iron 7,750 tons; scrap iron 5,580 tons; blooms and billets 620 tons; The produce of which is, 1,750 casks of nails; 1,550 tons of castings;—5,200 tons of hoop, round and square iron, &c., &c. They give employment to 520 hands, and the gross value of the manufactured goods for the past year is $1,038,500. Richard Borden, Esq., is the agent and director of this extensive concern.'

Jumble.

The shells used by the artillery on the 9th of May contained 72 musket ball each.——Tirrel's trial for arson has been postponed till November.——1000 panes of glass were recently broken by a hailstorm at Marshall, Mich.——It is reported that the proceeds of the Philadelphia Telegraph station average $150 per day.——The papers which had hoisted the "54, 40" flags at their mast heads, have hauled them down.——Upwards of $30,000 are to be appropriated for fire works, in the different cities of the Union on the 4th inst.——The citizens of Dayton, Ohio, have subscribed $10,000 for the support of the families of volunteers from that town.

Science of Mechanics.

(Continued from No. 40.)



STRENGTH OF TIMBERS, &c.—A strip of ash elm, or black oak timber, one inch square, will sustain a weight, by a regular draught endwise, of 6,000 lbs. A piece of square timber, of either of these kinds, ten inches in diameter, will sustain a draught of 600,000 lbs. If a beam of this size, and twenty feet in length, is confined at one end in a post, or otherwise, while the other end projects horizontally as represented, A, B, in the cut, the beam thus projected will sustain 12,500 lbs.; and as the length of the beam is twenty-four times as great as its diameter, the pressure or weight on the end of the beam is reduced to one twenty-fourth part of 300,000 lbs.; which is 12,500 lbs. But if the beam be only ten feet long, as C, D, the end of it will sustain a weight of 25,000 lbs., and the two ends D, C, will sustain unitedly 50,000 lbs. If the beam be laid across the top of the posts, as E, F, its centre G, will sustain a weight of 30,000 lbs., equal to the united strength of the two beams C, D, although its ends are not confined. If both ends of the beam are fimly confined, as shown, H, I, the centre J, will sustain a weight of 100,000 lbs, which is equal to the strength of E, F, and D, D united.—Because, if the beam H, I, breaks at all, it must break in three places at the same time; of course we may count on its own strength three times exerted at the same time. As a general rule the strength of a beam in the ordinary frame-work may be calculated, by multiplying the area of the end of the beam in inches by 6,000, and dividing the product by double its length in feet: the quotient will show the capacity of the beam in pounds. But as this rule is only appliable to black oak and other similar timber, it must be modified in its application to other kinds of timber of different capacities. Various tables have been published, purporting to show the relative strength of different kinds of timber, but none of these can be depended on to furnish a general rule, on account of the difference in the strength of different specimens of the same species. Of the timber commonly used in this country, hickory or white walnut and white ash are esteemed the strongest, especially those grown in open ground, which are superior to those grown in wild forests. White oak is preferred on account of its durability and pliability. Spruce has the most strength in proportion to its weight, and may be classed with black oak, elm and locust, while pine, whitewood chesnut and popular are classed among the inferior kinds with regard to strength, though some specimens of these are quite equal to some inferior specimens of oak or ash. In our next we shall explain some of the relative advantages of various combinations of timber on the principle of braces, and it may be remarked that the inferior kinds of timber, and especially spruce, yellow pine and hemlock, are much stronger on a draught, than iron or steel in proportion to their weight.

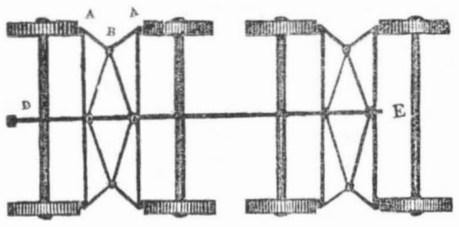
(To be continued.)

COMPOSITION OF VARIOUS ALLOYS.—Brass is composed of two parts of copper to one of zinc; or copper and calamine, [an ore of zinc, equal quantities. Pinchbeck consists of from five to ten parts copper, and one of zinc. Bell metal is composed of three parts copper and one of tin. Gun metal, nine parts copper and one tin. Tombac, six teen parts copper, one part zinc and one of tin. The composition of pewter, is 7 pounds of tin, one of lead, four ounces of copper and two of zinc. That of type-metal is nine parts lead, two parts antimony and one of bismuth. Solder, two parts of lead with one of tin. Queen's metal, nine parts of tin, one of bismuth, one of antimony, and one of lead. Jewel gold is composed of twenty-five parts gold, four parts silver, and seven parts fine copper. In forming metallic compounds or alloys, it is proper to melt such of the ingredients as are the least fusible first, and afterwards add the others, stirring them briskly till they are thoroughly commixed.

PENFIELD'S IMPROVEMENTS.—Our readers will remember that we some time since gave a partial description of an apparatus calculated to supersede the use of the brake in stopping trains of cars on railroads. We are now enabled to announce that the inventor, H. F. Penfield, Esq., has not only completed a *loco-stative* on a large scale, and strong enough to reduce the speed of an ordinary train of cars from the rate of 30 miles per hour to zero or rest, in ten seconds, but has also added several other improvements—one of which relieves the body of a passenger car—and with it the passengers of course,—from the unpleasant, sudden, and violent lateral motion, to which cars are generally subject when moving at a high speed. We expect to procure a new engraving and present a representation of these improvements, with explanations, in our next paper.

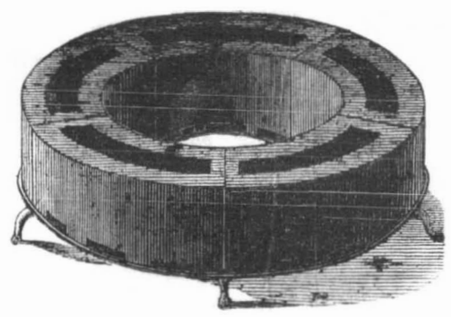
New Inventions.

GOUCH'S IMPROVED BRAKE.



EXPLANATION, &c.—This is one of the most ingenious and scientific plans for a brake, or rather series of brakes, to be applied to the wheels of an eight wheel car, that has ever been introduced. It is applied on the principle of the toggle lever, which of all mechanical forces is the most unlimited and the arrangement is such that by the motion of the long central rod, either forward or backward, the friction blocks are applied to all eight of the wheels at the same time. A vertical view of the eight wheels of a car, with their axles, brakes and connections, are shown in the cut, and require but little explanation. Each pair of brake-blocks, A A, are connected to each other by straight rods. Four toggle levers are connected by a double toggle-joint at B, and of these two are connected by moveable joints, to the blocks, and the other two extend to the central rod, and are connected to two sliding blocks, C C, where they also meet the two opposite levers. The central rod, D E, passes through the blocks, C C; but is furnished with small shoulders, pins or projections, near the blocks C—not between but out side of them,—so that when the central rod is moved either forward or backward, the sliding blocks are forced toward each other, and consequently by their action on the short levers, force the brake-blocks against the wheels. The central rod is moved by either a simple vertical lever, or hand-wheel shaft at either end; and if the central rods of the several cars in a train, are connected to each other, the brakes of all the cars may be applied to the wheels at the same time, by the exertion of one brakeman. The inventor of this brake or system of brakes, is Mr. Lyman A. Gouch, of Springfield, Mass.

GREGGORY'S TIRE FURNACE.



EXPLANATION.—This is a circular furnace about five feet in diameter and twenty inches high, made of sheet iron, and is calculated for the use of blacksmiths, to heat conveniently and uniformly the tires of carriage wheels, preparatory to setting, fixing, and securing them on the rims of the wheels. The top or lid may be removed at pleasure, and several small bars or strips of iron, and placed inside, a few inches from the bottom to support the tire while exposed to the action of the fire, either of wood or of coal, within the circle. The furnace is ventilated at the bottom by several air holes, as may be seen in the engraving; and has a series of narrow curved apertures at the top, for the smoke to escape. Any one who has the least knowledge of the principle of baking, or equalization of enclosed heat, will readily see the excellence of this invention, with regard to both economy of fuel and the uniformity with which the tire will be heated, even if the fire should be unequally distributed. The inventor has mentioned a circular partition forming two circular apartments, to accommodate large and small tires separately: but we can not think this of much consequence. This furnace has been recently invented by Mr. A. Greggory of Pike, N. Y., who intends to procure a patent, (if he has not already); and as it may be readily constructed by any blacksmith. we shall expect it to be readily adopted and come into extensive use.

IMPROVED DIE FOR PLATES AND BASINS.—One of the neatest and most novel and perfect inventions of the season, is a set of dies of peculiar construction, recently invented by Mr. N. F. Goodrich, of Meriden, Ct. By means of this improvement—which for certain reasons we shall not fully describe at this time—any variety of beautiful pie-plates, wash-basins, &c., may be made of single pieces of tin plate, each vessel being entire, of one piece and without seam or solder. By this invention, which performs what has hitherto been considered impossibilities, a new and neat article will be furnished at a cheap rate, and will readily supersede many of the comparatively awkward articles in common use. Mr. Goodrich has taken measures for securing a patent.

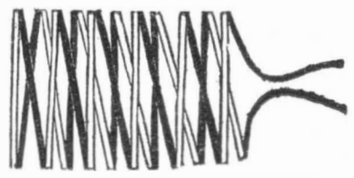
RIDER'S IRON BRIDGE.—We have heretofore alluded to this invention—probably the *ne plus ultra* of bridges,—and are happy to announce that the inventor has constructed a model section 40 feet in length, which with brace railing only four feet high, has stood the test of having one of the heaviest locomotive engines frequently pass over it. This bridge is of a combination of wrought and cast iron, and the expense does not exceed that of wooden bridges. We shall probably procure an engraving, and give a full description of this bridge in a few days. The model may be seen near the railroad and 33d street, New York.

IMPROVED TENT.—A Mr. Moakley, of Albany, has invented a military tent which is spoken of as being far superior in elegance, excellence, comfort and economy, to any-thing of the kind ever seen or heard of. It is to be exhibited at Washington, and the fashion of it may be adopted by the Government for the army.

The Magnetic Telegraph.

We are happy to say that the telegraphic line between New York and Boston, via New Haven and Springfield, has been completed and put in operation, thus furnishing the Boston people with the means of obtaining intelligence in less than five minutes, from the Capitol at Washington. There are now in operation in the United States, about 960 miles of telegraph lines; and there will be 500 miles more added, according to present prospects, by the 25th of August. Measures are in progress for extending lines from Boston to Portland, Me.; and westerly from Philadelphia to Pittsburg and Cincinnati; and from Buffalo to Detroit and Chicago.

Thermo-Electricity.



This term expresses the development of electricity by the agency of heat; and this principle is illustrated by the fact that if two dissimilar metals are heated while in contact, an electrical current flows from one to the other. If the ends of a piece of brass wire is placed in contact with the end of a piece of German silver wire, and the point of contact is heated by a lamp, or an ignited coal, a quantity of electricity will flow from the German silver to the brass; and if a connection is made between the two opposite ends of the wire by any conductor of electricity, so as to form a circuit, the current will continue to flow through the circuit as long as the heat at the junction is continued. If two plates of the same metal—iron or copper for instance,—are connected by a wire, and one of the plates is heated, an electric current will flow from the cold to the heated metal: but the indications are much more conspicuous when plates of dissimilar metals are used, and judiciously arranged. The most proper metals for producing thermo-electric currents, are silver or German silver and antimony. When plates of these metals are placed with the edges in contact, and heat is applied to the junction, the electric current flows from the German silver to the antimony, and thence by a circuit conductor to the former: and if the plates contain two or three feet of surface each, the current produced may be conducted by the circuit wires, through fonts or magnets, and will produce effects similar to those of the galvanic current. The relative power of silver and German silver, as positive poles, for the production of thermo-electricity, appear on trial to be precisely equal: but no other metal appears equal to antimony, as a negative. The plates for this purpose should not exceed six inches in breadth, and the point of absolute contact should not exceed one-fourth of an inch: and the greatest effects are produced by applying the heat principally to the negative plate near the junction. A thermo-electrical battery may be constructed by connecting several pairs consecutively, each pair forming a sharp angle at the junction, (as shown in the engraving,) so that one extremity of each pair may be heated at the same time by hot oil, or the radiant heat of a heated bar of iron; and a battery thus made will produce a current of electricity of sufficient quantity and intensity to produce shocks, drive an electro-magnetic machine or deposite metals from their solutions. A variety of phenomena appears in thermo-electrical experiments, which have not been accounted for on any known principles; in fact the whole science is in its infancy, and the causes and effects thereof are but imperfectly known: but there appears no reason to doubt that this branch may yet be advantageously applied to many useful purposes.

(To be continued)

Arts and Trades.

STEREOTYPING.—This art consists in the preparation of metallic plates with faces in exact imitation of wood engravings or forms of types, for the purpose of letter-press printing, when more copies or impressions are wanted than can be produced by the original types or engravings. For this purpose an engraving, or form of types, is placed in a horizontal position with the face up, and enclosed by strips or pieces of metallic plate; it is then brushed over with linseed oil, and a fresh mixture of fine calcined plaster of Paris with water, is poured upon the face, to the depth of half an inch or more, according to the size of the form or engraving. The better to ensure the perfect filling of all the lines and interstices by the plaster, a small quantity of the mixture may be brushed over the face with a soft brush, and the rest must be poured on immediately before the first coat becomes hard or set. This plaster, which has the consistence of cream at first, immediately becomes solid, and in a few minutes is taken off from the engraving or types, and is put into an oven, or iron box, and subjected to a moderate heat till it is dry. This plaster-cast is then enclosed in an iron box, and so adjusted that its face may be parallel to, and about one-eighth of an inch distant from one of the iron surfaces of the box. The iron box is then immersed in a vessel of melted metal, composed of twenty parts of lead with two of antimony and one of tin. The box with the mould is immersed end-wise, and having apertures at the top and bottom, and being allowed to remain several minutes the metal fills all the minute interstices of the plaster mould. The aperture or gateway at the bottom then being closed by an arrangement for that purpose, the box is withdrawn and suffered to cool. This new metallic plate is then trimmed, squared, and attached by screws to a block of wood, of the proper thickness to raise the plate *type-high*, when it is ready for use; and if the process is well-managed, the new plate will give as delicate impressions on paper as the original type or engravings. If several metallic casts are to be taken from one plaster mould, the latter may be rendered hard, firm, and durable by dipping it in linseed oil, and baking it till the oil is thoroughly dry—repeating the operation till the mould is saturated and perfectly dried.

VARIETY

A little girl only 10 or 11 years of age, has been convicted of arson in South Carolina, and sentenced to be hanged of the first Friday in August. It is thought she will not be executed, however.

The papers from all sections of the Union, speak of an abundance of flour, grain, and other produce in the depots of such articles, and the prospect of an excellent harvest the present season.

A famous punster being desired to make a pun extempore, asked upon what subject? 'The king,' was the answer. 'O, sir,' replied the wit, 'the king cannot be a *subject*.

A printer in setting up the sentence,„' we are but parts of one stupendous whole," by the mistake of a letter made it read, "we are but parts of one stupendous *whale*!"

Only two towns in the State of Rhode Island, have granted licenses to sell intoxicating liquors. Those towns,—Foster and West Greenwich,—should be presented with appropriate banners.

It is stated that a large company of volunteers for the Mexican war, was raised, enrolled and reported ready for service in the short space of *two hours*, at Sprinfield, Ill.

"How seldom it happens," remarked one friend to another, "that we find editors who were bred to the business.' 'Quite as seldom,' replied the other, 'that we find the business *bread* to the editors.'

An express train of cars leaves Albany every morning for Ballston and Saratoga via Schenectady railroad. It runs through in a little over two hours and returns in the same time.

There is said to be an immense number of the gentry going to visit Saratoga and Niagara this season, for the very good reason that they can not stay at home without being dunned.

The cost of the war for one year, as estimated by the War and Navy Departments, will be about $24,000,000. This is not quite up to $500,000 per day, as some have estimated it.

Park Benjamin says that a large number of Mexicans having employed an American *Taylor*, found him pretty good at *cutting*, *whipping* and *felling*, but didn't like his *charges*.

A scamp in Northampton, Mass., has been subjected to a fine and costs of court, for severely whipping his daughter, a girl ten years of age. He has probably escaped the temperance pledge.

There were at Camp Washington, near Cincinnati, a few days since, seven hundred volunteers more than the required number. Many of the rejected men were bitterly dissatisfied.

During a recent thunder shower in Springfield, Mass., while a boy was unhitching a horse from a harrow, the horse was killed, and the whipple-tree and harrow were broken by lightning, but the boy was not injured. A narrow escape.

It was stated at a meeting of the Farmers' Club last week, that a Mr. Platt, of Madison, N.Y., raised last year one hundred and seventy-seven bushels of shelled corn to the acre.

A weekly paper entitled 'The Public of the Rio Grande,' has been started by the Americans at Matamoras. It is printed half in English and half in Spanish, and edited by Mr. H. McLeod.

About four miles of Croton water-pipes have been laid down within the past year, making in all, the enormous total of one hundred and sixty-three miles of pipe, now in use in this city.

D. Plimpton. Esq., of New Buffalo, Michigan, took thirty-six barrels of white-fish at one haul of the seine, about three weeks ago. We should think he might get his living by fishing.

An old newspaper, published in 1740, mentions a cucumber measuring four feet in circumference, and not then done growing. If it has kept on growing till this time, it must be considerable large.

It is stated in an Ohio paper, that of the convicts in the Ohio State's prison and Cincinnati Penitentiary, two hundred and twenty-six have been dealers or assistants in the liquor business.

Five hundred pigs of beautiful soft lead, have been brought to St. Louis from the Missouri mines, to be shipped directly to Versailles in France by way of New Orleans.

Several of the rummers who had been indicted at Albany are said to have got clear on account of the fact that some of the jury were in the practice of selling beer.

Mr. Criver lately made an ascension in a balloon from Wilmington, N. C. After sailing pleasantly about two miles, he landed in a dense swamp, where he remained over night.

A western paper boasts of monstrous large productions of various kinds, and among the rest, mentions *hailstones* as large as a man's fist. They must be very convenient in July.

It is earnestly recommended to all those who intend to drown themselves, to take a cork vest or life preserver along with them; as they perhaps may change their minds when they get into the water.

The Chesapeake and OhioCanal has a fair prospect of being forwarded to completion, the company having effected arrangements for removing the principal impediments.

An exchange has one article headed '*patches* for the *seat* of government.' This is all very well; but it will require more than one *Taylor* to mend all the *breaches* of modern legislation.

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[Original.]

Lines,

Written on the death of Dr. J. H. Brush, who was a dear friend of the writer. He died in St. Augustine, Florida, May, 1846.

Oh friend, forever loved! for ever dear,
What heart-felt tears have bathed thine honored bier?
What sighs ascending to the heavenly throne,
Where thy pure spirit has forever gone?
The "King of Terrors,"—Death—did call,
Thou left dear friends—thy mother—all!
He spake, then soar'd above thy head,
When least evpected, thou wast dead;
Scarce warning gave of his approach,
Before thou withered 'neath his touch,
A distant soil thy ashes hath received,
With none but strangers, o'er thy grave to grieve,
No soothing tones from voice of mother,
No warm, embrace from thy dear brother,
No loved re-echo's to thine sigh's;
No kindred hand to close thy eyes.
Thou died, lamented, mourned and blessed
By all that knew the virtues thou possess'd.
To me far dearer was thy artless love!
Than all the joys, wealth, fame, and friends could
To thee with reverance, I could have bow'd, (prove.
Thy mind and soul so richly was endowed
With goodness, that the humble dared to raise
Their eyes to thee in humble praise.
Adieu, dear friend! though gone, thou leavs't a name
Encircled with virtues that will stand all time.
Afflictions' semblance bends not o'er thy tomb,
Affliction's self deplores thy early doom.
No sculptur'd monument need rear its head
O'er thy last home, thy resting bed,
But wild flowers of luxurious growth,
"Emblems pure of modest worth"
In all their native beauty dress'd,
Point out the spot where thou doth rest. M. F. B.

For the Scientific American.

A Horizontal Line.

'Tis said no string, however fine,
Be it cat-gut, wire or twine,
Can make a horizontal line,
A line that shall be straight;
If to the ends you should attach
Lead, iron, stones—a mighty batch,
A weight which never had its match,
'Twould be too small a weight.

Pictures Precautionary.

I saw a pauper in the street,
Begging from door to door,
A crust of bread, poor wretch! to eat
He seldom ask'd for more.
I said, "old man, I grieve to think
That begging's your employ;"
"And why," he said, "I learned to drink
When I was but a boy."

I saw a man within the stocks
And rueful was his look,
The boys were pelting him with rocks
Yet all he had to brook;
A laughing stock to all—we think
To him there was no joy,
And why? he said, "I learn'd to drink
When I was but a boy!"

I saw a man within the jail
All haggard and care worn,
His eye was sunk, his cheek was pale,
It made my spirits mourn;
And sympathy that seels the link
Of others grief or joy
Ask'd why? he said, "I learn'd to drink
When I was but a boy!"

I saw a man within a crowd
Beneath the gallows tree,
The curses of the throng were loud
Upon the felon. He
With look from which the soul would shrink
So fiend-like to destroy,
Said to the mob, "I learned to drink
When I was but a boy!"

I saw a man down in the ditch,
I heard him groan with pain,
I gave him soon a helping hitch,
And raised him up again.
I asked him, "why below the brisk!"
"Why caught in such a ploy?
He said, because "I learn'd to drink
When I was but a boy."

I saw a man, one winter's day
Befrozen, stiff, and cold.
He's made for home, but miss'd the way,
Thus is the story told,
But whiskey was the cause, we think,
That did his life destroy:
I heard them say, he learn'd to drink
When he was but a boy.

And is it thus, I woful said,
Of drinking, this the end?
My very heart within me bled
I said, "now heaven defend
My own dear child from ruin's brink,
While this, at least my joy
What e'er betide, he learned to drink
Not, when he was a boy."

GREAT RYE.—The season for reporting stalks o rye, great and high, some of which have been already reported nine feet and upwards, we are disposed to offer a premium of three loaves of rye bread to the person who shall send us the tallest rye stalk, provided the height thereof shall not be less than 19 feet.

THE WEEKLY SUN.—We should have mentioned before, that this very best and cheapest weekly paper in New York, has been recently embellished with an elegant ornamental head, and being printed on new type, excels other business papers in elegance as well as intelligance.

A Natural, Universal Alphabet.

Much attention seems to be of late awakened to the subject of a Phonographic, or *sound-spelling* system of Orthography. The idea that a certain number of distinct elementary verbal sounds enters into the composition of all languages, and into the structure of every human voice, is discovered to be so true, that many minds have found intelligent employment and peculiar gratification in developing a system or *science* of Spelling from the natural properties which are inseparable from every man's organs of speech—a science admirable for its beauty and harmony, as it is important for its universal applicability to language, its simplicity, and conciseness. Although it is not a thing the most easy of accomplishment, who that understands and can appreciate the perspicuity and perfection of the Natural Alphabet, can estimate the amount and versatility of advantage that would be derived from the universal adoption of such an Alphabet? Who can calculate how vastly much easier of acquisition would be the various tongues of mankind, were the infinitude of words which they comprise all spelled according to a natural, fixed, and invariable principle? What years of valuable time, and of vexatious and discouraging labor would be saved in the learning of languages, if an individual could take up a book of any possible foreign tongue, and read its unstudied pages with the same accuracy and ease of pronunciation that he could his own, and as correctly even as a person of that language could read it himself? How many worried, tedious, and toilsome hours of torture would our youth and children be spared, from the time of their learning the alphabet until they become good spellers and pronouncers of our most problematical and hodge-podge orthography? Must not that be a stupendous and desirable improvement in the Art of Letters, under which no two individuals could disagree either in the spelling or pronunciation of words, and by which it were easy for any child to spell or pronounce all words correctly, whether strange or familiar, long or short, native or foreign?

As many readers of this article may not have bestowed upon this subject the amount of attention which the writer has given it, or which it so well deserves, we will state the principal properties which would obviously distinguish a Perfect Alphabet, and then leave the reader to compare with these acknowledged standards, the arbitrary alphabet in present use, and the proposed one which we subjoin, that has its immutable foundation in the nature of every man.

An alphabet to be perfect must,

1st. Comprise as many different letters as there are distinct elementary verbal sounds made use of in human speech.

2d. It must comprise *no more* various letters than are absolutely requisite to represent this catalogue of sounds.

3d. Every different sound must have a distinct character to express it, and every different letter must always represent a different sound.

4th. Under all possible circumstances every individual letter must bear the same sound. The same letter must never bear two or more sounds, neither must any two or more different sounds ever be written by any one letter.

5th. The *names* of the letters should be as nearly as possible identical with their elementary enunciation in words.

Hence, a perfect system of Orthography ought

1st. To admit of neither any redundancy or deficiency in the number of letters used to spell a given word—to admit of no *silent* or *understood* letters; but to employ exactly *as many* and exactly *the same* sounds or letters in the spelling of a word as there are distinct elements in the word when its combination of sounds is dissolved.

2d. To spell no two or more words or syllables with the same combination whose pronunciation is different. Nor to spell any two or more words or syllables differently whose pronunciations are alike.

3. To make use of one Vowel (simple or compound), *and one only*, in every imaginable syllable.

The violations of each one of the above principles which are tolerated in the ordinary alphabet and spelling, are, in the alphabet egregious, and in the orthography innumerable. Let it be remembered that Phonography does not meddle with the *pronunciation* of our language; but on the contrary, viewing the pronunciation as already permanently established, it aims not only to *perpetuate* our present perfected and most euphonic speech by means of a concise and unalterable spelling of every word, —but also to *reconcile* and *harmonise* Orthography with Pronunciation, which have been for so many centuries at such deplorable variance. This enterprise, if it could be generally effected, will be one of the most important means of breaking down the high partition walls which barrier the intercourse of nations of different speech.

The inimitable absurdity, incompleteness, contradictiveness, deformity, duplicity, and irregularity of the English Orthography, engenderd by its most wretched alphabet, will be forcibly manifest to whoever applies the above principles to the test of but few of the innumerable examples of our incoherent, inexplicable, zig-zag spelling. Consider the errors and deficiencies of our alphabet to express the language for which it is designed. The vowels are too few by eight, and too many by one. The 'diphthongs,' or compound vowels, are too many by a baker's dozen, and too few by several. Consonants are sometimes vowels in spelling, and vowels sometimes assume the place of consonants. Six important consonants of our tongue are altogether suppressed from its rude and artificial alphabet, while in their most honorable stead we are obliged to put up with four odious excrescent duplicates, (g, c, q, and x.) Some consonants are named by one terminating vowel, (be, se, etc.) some by another, (ja, ka, ku,) some improperly by none, (ef, aych, es, eks,) some by a word, (atche, why,) and some by two words, (double-you.) Dozens of our words which are differently pronounced are spelt the same way, and vice versa. Some words contain twice the number of letters they ought, others not as many. Some sounds are represented in five, ten, fifteen, twenty different ways, and then again a single letter assumes two, five, *eight* different sounds. Six persons may produce the same pronounced word out of six different spellings, and again ten persons may pronounce the same spelt word in ten different ways. *Not a hundred words of the whole sixty or eighty thousand of our language are spelled in obedience to their pronunciation*, nor pronounced according to the names of the letters which compose them; and I challenge any man to produce as many from all the English dictionaries in Christendom. In the French language the case is about the same, if not worse, though the German spelling is more precise and true to the names of its letters than either. It is a fact no less remarkable than true, that not only our present system of word-spelling gives at various times different sounds to every letter of our alphabet without exception, but also that every sound of the alphabet without exception, is represented by various other letters and combinations. Very few persons we think have any conception of the vast profusion of this sort of child-work inconsistency which has accumulated in our spelling, so insensibly have we all overcome it, or rather been overcome by it, and become wedded to it from infancy. To such an extent indeed does this species of irregularity pervade our spelling, that with the editor's permission I will show in a subsequent communication that the thirty-eight elementary verbal sounds used in our language are represented in its knotty, labyrinthal code of spelling by no less than the enormous number of two hundred and five different combinations. Is it any wonder that most children conceive so early and lasting an aversion to their books when their path is so continually beset by this immense bundle of difficulties, quite insurmountable with them for a long time, and for the very difficulty of which, perhaps, they are constantly liable to punishment from their unfeeling and inconsiderate teachers? Who would not hail with joy and acclamation a public reform or rather completion of an alphabet which would thus release the language from the vast array of these glaring imperfections which are fastened upon it? Is it not yet time in this 59th century of the world, and this age of literary refinement, for so important and useful a change to be effected?

The natural alphabet of the English language is composed of thirty-eight distinct and separate verbal sounds. Twelve of this number, which are the most important sounds of the alphabet, and which therefore ought to be most explicitly defined, are *vowels*, or simple breathings, the whole of which form a scale somewhat analagous to the gamut in music, as the following arrangement will show.

VOWELS.

NAMES.		PRONUNCIATION.	CHARACTERS.
1.	e,	as in me, beet, seat, machine,	*e.*
2.	ih,	as in sit, dactyl, been, busy,	*ĭ.*
3.	a,	as in ate, great, pain, day,	*a.*
4.	eh,	as in led, head, said, bury,	*ĕ.*
5.	ah,	as in hat, cavalcade, plaid,	*ă.*
6.	i,	as in ice, my, die,	*i.*
7.	uh,	as in but, done, nation, heard bird,	*ŭ.*
8.	oh,	as in not, what, start,	*ŏ.*
9.	au,	as in for, wall, law, Saul, nought,	*ô.*
10.	o,	as in note, boat, doe, soul, low,	*o.*
11.	oo,	as in foot, pull, could,	*ŭ*, or *u.*
12.	ooh,	as in do, lute, boot, suit, new, sue,	*u.*

Here it cannot but be apparent to every mind, that what are commonly called the *short*, *broad*, *etc*, sounds of 'the five vowels,' are, in fact, distinct, different, and independent Vowels, which are so constantly and incessantly made use of, that by all means they should be universally denoted by different characters. The difference between the sound of the character *e* in the two words me and when, is so great, that to spell them by the same vowel is no less absurd than the Irishman's mode of writing *kaugh-phy*. And yet there are no less than ten thousand instances of this inconsistency in every English dictionary, and as many more relating to each of the eight wanting vowels. It is a deplorable fact, that the vowel most frequently uttered in our language (*uh*, as in ocean, much, utter,) has no legitimate representative in our orthography; and no less than TWENTY different contrivances of combination are resorted to in order to express it. Most aptly has the popular orthography been termed, 'the sink of all philological abominations.'

There are three Compound Vowels, namely:

NAMES & CHAR.	PRONUNC.	FORMATION.
1. oi, (*ỹ*)	as in adroit, joy,	composed of *au* and *e.*
2. ou (*ȳ*)	as in out, owl,	*oh* and *ooh.*
3. eu (*ẏ*)	as in acute, unite,	" *e* or *ye* and *ooh.*

Here it will be clearly seen that the English letter *u*, if pronounced *you*, is not a simple vowel, but a compound one, as it contains the elements of two others; viz., of *ye* and *ooh* when it commences a word or syllable, and of *e* and *ooh* when it occurs elsewhere; as in mu-sic, u-nity. This is very different from the pure vowel sound in flute, (*ooh.*)

Walker and many others affirm *i* to be a compound vowel. But any one may see that it is always a pure vowel except when it ends a word or syllable, by comparing such words as pine, thyme, with such as bi, high, die, my, etc.

The Natural Alphabet likewise contains three Semi-Vowels, or sounds which partake both of the nature of vowels and consonants, as follows:

NAMES.	CHARACTERS.
1. he.	*h.*
2. we.	*w.*
3. ye.	*y.*

These names, it will be found, very nearly correspond to the power which those letters possess in words. So should all the names of letters be regulated. What miserable genius of deformity could have fastened upon the English tongue such mongrel, nondescript names for these beautiful elements as *aitch*, *dubbl-yu*, *wi?*

The Consonants of the Natural English Alphabet are twenty in number, comprising *ten pairs*, and are most naturally classified as follows:

PRIMITIVES.		AFFINITIVES.		
Names.	*Characters.*	*Names.*	*Characters.*	
1. be.	*b.*	2. pe.	*p.*	labials.
3. fe.	*f.*	4. ve.	*v.*	ditto.
5. em.	*m.*	6. en.	*n.*	nasals.
7. el.	*l.*	8. er.	*r.*	liquids.
9. de.	*d.*	10. te.	*t.*	dentals.
11. the.	*th.*	12. thhe.	*ṫ.*	ditto.
13. se.	*s.*	14. ze.	*z.*	hissals.
15. she.	*c.*	16. zhe.	*x.*	ditto.
17. ghe.	*g.*	18. ke.	*k.*	gutturals.
19. je.	*j.*	20. che.	*ç.*	linguals.

The Natural Alphabet of the English language as above classified, may be adapted to the common one thus:

a, ă, (pronounced *ah,*) b, d, e, ĕ, (*eh,*) f, g, (*ghe,*) h, (*he*) i, ĭ, (*ih*) j, ç, (*che*) k, l, m, n, o, ŏ, (*oh*) ô, (*aw*) p, r, s, c, (*sh*) t, th, TH, (as in THin,) u, (as in lucid) ŭ, (*uh*) ü, (as in bull) ų, (*eu*) v, w, (*we*) y, (*ye*) z, x, (*zh*) q, (*oi*) and ȯ, (*ou*).

The English letters *c*, *q*, and *x*, as will be noticed, have no part in the Natural Alphabet, because they are duplicates; the equivalents of *c*, being *s*, (*se*), and *k*, (*ke,*) as in lace, cape. The equivalent of *q* (or rather *qu*, for these are always united in spelling) is *kw*; and the equivalents of *x*, are *ks*, as in extend, and *gz*, as in exert. Although these extraneous letters must be sacrificed in the Improved Alphabet, yet their *characters*, being very familiar, and easy of writing, it will be most useful for us to avail ourselves of, in expressing the four new letters *che*, *she*, *zhe*, and *oi*.

Several new alphabets which have been published have incorporated the consonant combination *ng* into the list of simple consonants. But we altogether object to the use of this sound as a distinct letter, it being manifestly only an ordinary instance of the blended sound of two consonants, a thing common to each one of them. If we are to have a letter *ng*, to be consistent let us by all means retain *ku*, and *eks*, and invent besides a whole host of other compound consonants, such as *nd*, *tr*, *st*, *bl*, *rm*, etcetera, ad infinitum.

A great deal of deserved discredit has accrued to the meritorious project of a National Reform in our most defective Orthography by the adoption of a perfected Alphabet, through the foolish and utterly impracticable attempt of some enthusiasts to introduce an entirely new set of *characters* to represent the alphabetical sounds. Such an enterprise would be no less useless and vain, than an endeavor to revolutionize the whole English *pronunciation*, or even to bring about *a new language*. But fortunately, the characters of our English alphabet are as admirable in form, and as easy of execution in writing, as they are familiar and universal,—as beautiful even as their popular usage in spelling is barbarous and detestable. Ingenuity could devise no possible set of characters that would combine in so eminent a degree neatness of form, and susceptibility of ornament and variation, with facility of writing, and distinctiveness of appearance. And as to the fifteen letters which the English alphabet requires to complete the catalogue of elementary sounds contained in its spoken language, those of them which cannot be supplied by the duplicate letters in the existing alphabet, may be represented by proper and familiar modifications of several of the characters already in use.

We may here take occasion to remark, that it is not pretended that the above thirty-eight verbal sounds are sufficient accurately to express any possible word in any language; for we are contented here to extend the Natural Alphabet only so far as will entirely comprehend the English spoken language. These thirty-eight sounds however are the bases of all human speech, universally, and any word in any tongue which cannot be correctly spelled with this alphabet, in addition to a few other letters which are themselves very slight modifications of some of these—any such word, we say, is not composed of *verbal* sounds, but of brutish, guttural *noises*, which ought not to be dignified with the name of *speech*.

In a forthcoming work by the author, entitled—"THE MATHEMATICAL SPHINX; a Collection of Curious, Difficult, Interesting, Ingenious, and Enigmatical Questions relating to Arithmetic and the Mathematics," one of the prizes offered is $10 to any person who will discover the contents of an article therein contained, printed in a *cypher* of the above Alphabet. J. V. W.

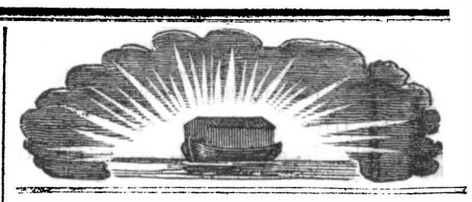
GRAHAM'S MAGAZINE.—The June number of this popular favorite is published, and abounds with rich gems of literature from the pens of the most popular authors. In this number is presented three rich embellishments, namely, a superb mezzotinto engraving representing "Parental Felicity;" "Paris Fashions," in its usual style of elegance, and an excellent full length portrait of Benjamin West. This work is published at 98 Chestnut st., Philadelphia, and at the Tribune Buildings, New York.

A FEW MORE LEFT—We have still on hand a few copies of that excellent work, for practical mechanics, "Scribner's Engineers and Mechanics' Guide," for sale at $1,12 per single copy. Those who have procured them have already derived more value of instruction from the work than ten times its cost. Young mechanics can not too highly appreciate the advantage of general scientific intelligence.

THE ALBANY DAILY KNICKERBOCKER.—This wide awake paper has recently been enlarged, and has put on a very pretty new cap. We are glad to see these indications of prosperity, and doubt not that our friend Hastings will be richly remunerated for his enterprise and perseverance in furnishing the citizens of Albany with a lively penny daily, in the face of a strong opposition.

THE PULPIT.—We have heretofore spoken of a very instructive and interesting monthly publication under this title, published by O. Scott, No. 5 Spruce street. Each number contains a variety of excellent articles for Sunday reading, including poetry and instructive articles, in addition to serious discourses. Terms, one dollar per annum.

THE WAR MOVEMENTS.—We have nothing of much importance to report on this subject at present It is expected to be more interesting soon.



The Millerites.

Continued from No. 40.

The arguments which were advanced by the Millerites to prove that the grand event must occur on the tenth day of the 7th Jewish month, appeared quite rational to the minds of many who had no faith in the theory with regard to the prophetic periods, and met with no considerable opposition from any quarter. They were based on some of the typical features of the Jewish law, several of which had already been fulfilled in the antetype with much precision with regard to the month and day. It was shown that the type of the passover, mentioned in the 12th of Exodus, in which a lamb was to be taken on the 10th day of the first month, and slain on the 14th, was fulfilled in the circumstances that Christ entered Jerusalem on the 10th day of the first month (John xii. 1, 12) and was crucified on the 14th: that the offering of the first-fruits, (Lev. xxiii. 11) which was three days after, corresponded with the resurrection, of which it was said that Christ became the *first-fruits* of them that slept. The feast of pentecost also (Lev. xxiii. 16) which was seven weeks later, was said to be instituted as a type of the affusion of the Spirit on the disciples, which also corresponded in time. And it was argued that as the day of Jubilee, (Lev. xxv. 9) in which trumpets were sounded, and liberty proclaimed to the captives, and which was repeatedly enjoined to be observed on the 10th day of the 7th month, was evidently typical of the coming of Christ to deliver and save his faithful saints, that event must occur on the 10th day of the 7th Jewish month, which would be on the 22d of October. All the signs which had been predicted to precede, and indicate the approach of the day of his appearing,—the darkening of the sun and moon (in 1780) the falling of the stars (in 1834) "distress of nations with perplexity" and the "sea and the waves roaring," it was confidently asserted, had all been as perfectly and conspicuously fulfilled, as could be consistent with the declaration of Christ that "as in the days that were before the blood they were eating and drinking, marrying and giving in marriage until the day that Noah entered into the ark, and knew not until the flood came and took them all away; so shall also the coming of the Son of Man be," [Matt. xxiv. 33.] Many sold their possessions and distributed the proceeds freely to all who had need or required pecuniary aid; many had neglected their farming and other business, and others abandoned their stores, factories and shops without any arrangements of their business. But the 10th day came and passed as other days had done. Then it could be seen, at least by some, that the very excitement produced by themselves, through the country, was entirely inconsistent with the declaration above quoted, that the time of the coming of the son of man should be as in the days of Noah when the mass of mankind should be following their avocation free from apprehensions of danger. The disappointed Millerites soon after broke into diverse sects or classes, many of them embracing the most extragant theories and opinions, and some of these classes became violently opposed to those of different opinions. But the more rational and considerate part of them, though much bewildered and hardly knowing what to believe, re-examined the grounds and foundation of their now shaken theory, and Mr. Himes of Boston who had taken a more active part than even Mr. Miller himself. in the promulgation of the doctrine, by the publication and circulation of millions of tracts and papers, called a conference of those who had been the principal leaders, a majority of whom favored the opinions that their theory had been correct in the main, but that their principal error had consisted in fixing too confidently on the year 1844 for the termination of the prophetic periods, although they could not readily see how those periods could be made to harmonize on any other year. An address from this conference was published and circulated; but it was evident that of those who assented to its principles, many had returned to the pursuits and cares of business, and had become somewhat indifferent to the subject, while some remained firm in joyful confidence, and have attempted to harmonize the termination of the prophetic periods on another year; and to concentrate a greater amount of harmonious evidence on this point, than was ever brought to bear on either '43 or '44. Some of the arguments on this point will be noticed in our next number.

(To be continued)

STRANGE MOVEMENT AMONG THE JEWS.—An English Magazine says that a great meeting was recently held at Frankfort, of the Jews from all parts of Europe, at which they expressed their opinions by vote, that there is nothing obligatory in the use of the Hebrew in their worship, and accordingly that it was best to retain it only in part as a badge of their nationality, and a bond of union. Also, on full discussion, that the Messiah is *already come*, the present toleration and comfort which they now enjoy, being what is meant by the promised Messiah. Also that there is nothing to forbid their freely blending with the nations among whom they reside.

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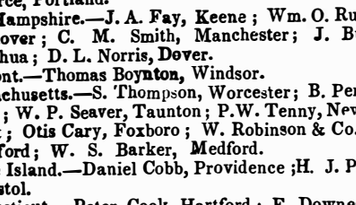

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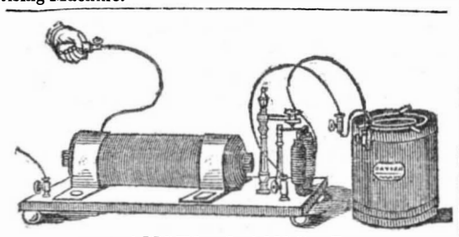

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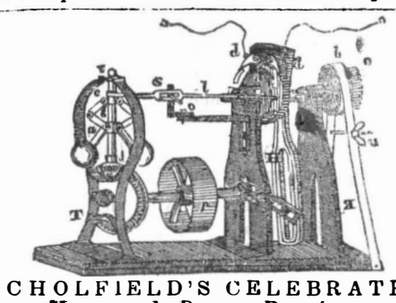

SCHOLFIELD'S CELEBRATED
Improved Patent Regulator.

N. SCHOLFIELD, Norwich, Conn., continues to manufacture, and keeps constantly on hand, his Improved Patent Regulators, for water-wheels and steam engines; he makes five different sizes, indicated by numbers commencing at the largest size, which is called No. 1, &c..

They are built in a neat and compact form, and printed directions accompany each machine, which will enable any mechanic to put them in operation; as a general rule the different numbers are adapted to different sized wheels, as follows;

For over-shot or breast wheels, 3 feet buckets, No. 5; 5 or 6 feet buckets, No. 4; 6 to 10 feet buckets, No. 3; 8 to 15 feet buckets, No. 2; 12 to 20 ft. buckets, No. 1; greater than 20 feet, No. 1 extra.

The following agencies have been established for the sale of these machines:—Jones, Denney & Ward, Boston; V. J. Bates & Co., Providence, R. I.; Charles Schenck, New York city; D. Wight & Son, Troy, N. Y.; R.M. Vansickler, Albany, N.Y.; S.C. Bemis, Springfield, Mass.; Denslow & Beach, Hartford, Conn.; Joseph B. Hughes, Philadelphia; Wells Chase, and Towner Dunlap & Co.; Baltimore.

N. Scholfield also builds to order Bacon's Improved Pickers, a superior article for cotton or wool.

Norwich Conn., Feb. 14. f15eowtf.

ILLUSTRATED BOTANY.

Edited by JOHN B. NEWMAN, M. D.

Circumstances make the man, and very often, as in the present case, the book. For years there has been a steadily increasing interest felt for the vegetable kingdom. Latterly this taste has been partially gratified by the literary magazines, which owe their popularity, in a great measure to the beautiful flower prints that adorn them. One specimen a month, however, is not enough, nor is it required in such connection. A work relating exclusively to the subject, is wanted by the public, and this want, the present enterprise is intended to supply.

Preceded by a short introduction on Physiology, and a view of the Natural and Linnæan Systems, the work will be devoted to a separate consideration of each plant.—Together with our own information, we shall draw on the standard works on Chemistry, Botany, and Medicine, combining every useful item of knowledge, and without lessening its value, present it in a concise and pleasing form. Obtaining our supplies from the same sources as the bee, we hope to *secrete* as elegant a sweet for the mind, as it does for the body. The properties of each, more especially the medicinal, will be confirmed, in a great number of instances, by personal experience. To this will be added its history; its meaning in the language of flowers; and poetry, either original or selected from the gems of the children of song.

The whole illustrated by splendid colored engravings, taken from nature. full size, and finished in the highest style of modern art.

This work is designed to be eminently popular in its application, and there is enough of that which is stronger than fiction about it, to render it, in no ordinary degree, interesting and instructive.

Terms.—This work will be published monthly, with four or six flowers, handsomely painted, in each number. Price three dollars a year, or two copies sent to one address for five dollars. A *very* liberal discount allowed to agents. J. K. WELLMAN,
Publisher and proprietor, 118 Nassau st.

*** Furnished to Seminaries, Colleges, and societies, in clubs, 10 copies for $20 a-year.

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Engraver, Die Sinker,

AND STEEL LETTER CUTTER
No. 184 William, corner of Spruce st.

Name-Stamps for Blacksmiths, Stone Cutters, Carpenters and machinists, steel letters and figures of all sizes constantly on hand for marking iron, steel, brass and wood; Notary seals, desk seals, door plates made and engraved; artificial flower stamps, vainers and loofers made at the shortest notice and on most reasonable terms feb11.

The Best Ink Known,

Two Silver Medals Premium!

At the Annual Fair of the American and Mechanics' Institute for 1846, a SILVER MEDAL was awarded by each to Thaddeus Davids for "the Best writing Ink known." 500 gross 2, 4 6, 8, 16, and 32 oz. steel pen ink; 100 gross, ditto blue, red, japan, and copying ditto; 200 gross, Indelible Ink, warranted, with and without a preparation in elegant cases; 5000 lbs. wafers, all sizes and qualities from 10 to 50 lbs.; 10,000 lbs., sealing wax from 6cts. to $1, per lbs. For sale, wholesale and retail, on accommodating terms, by THADDEUS DAVIDS,
Importer and manufacturer of sealing wax, wafers, inks, indelible inks, &c., No. 112 John street, New York, and by all stationers, booksellers, druggists, &c., in the United States. jny29

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A Rare Chance for a Manufacturer.

The Water-mills at the head of tide-water, in the pleasant village of East Haven, Ct., and within two miles of New Haven harbor, on an unfailing stream of ten or twelve horse-powers, are for sale at a very moderate price, and on liberal terms of payment. This site is susceptible of a considerable additional power, by increasing the head of water, if required: and its location is such that the cost of transportation of goods to the steamboat landing is merely trifling. A part of the price may remain on mortgage two or three years, if required. For further particulars enquire of Edwin Street, East Haven, or Robert Atwater, 192 Pearl st., N. Y. may6.

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Daguerrean Gallery.

179 Broadway, N.Y.

Miniatures obtained at this establishment in superior style, for One Dollar and upwards, according to size and finish. Every picture shall give satisfaction.

N. B. Instruction given in the art, and the most improved apparatus, &c., furnished on as favorable terms as elsewhere. GEO. W. PROSCH. ma28

Engraving on Wood.

THE subscriber is prepared to execute
WOOD ENGRAVINGS
of Machinery, Landscapes, Plans of every description for newspapers, book embellishments, &c. &c., in good style, and at short notice, at 89 Nassau street, in the
SUN BUILDINGS,
and adjoining the office of the Scientific American.
march 26. A. R. HAIGHT.

Rolling Mills, blast Furnaces & Forges,

Iron works of all descriptions, erected upon the most improved plans; steam or water powers.

Drawings, plans and estimates made for buildings, furnaces and machinery, and contracts for the whole or any part thereof taken and executed with promptness and despatch; and will also give his personal superintendence in the erection of iron works of all kinds, such as Rolling mills, blast furnaces—of hot and cold blasts—anthricite, bituminous, and charcoal or wood furnaces, forges, trip-hammers; iron, brass, and bell foundry, pudling and heating furnaces, air cupolo chaffery and refinery, or let out furnaces.

N.B.—All letters directed, post-paid, to S. B. MERKEL, Founder-machinist, millwright, draughtsman and Engineer, Philadelphia. Pa. feb11.

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DINING SALOON,

No. 144 FULTON STREET.
(Near Broadway): New York.

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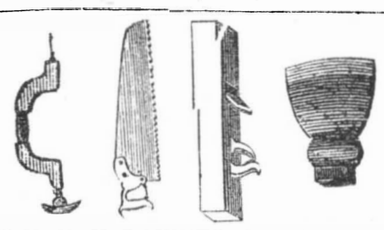
Roast Turkey,	18d	Boiled Ham,	6d
" Goose,	18d	Pork and Beans,	6d
" Chicken,	18d	Veal Pie,	6d
" Duck,	18d	Beef Steak Pie,	6d
" Beef,	6d	Chicken Pie,	12d
" Pork,	6d	Mush and Milk,	6d
" Veal,	6d	Rice and Milk,	6d
" Lamb,	6d	Lamb Pot Pie,	6d
" Pig,	12d	Fried Fish,	6d
Boiled Chicken,	12d	Fried Clams,	6d
" Mutton,	6d	Ham and Eggs,	12d
" Corned Beef,	6d	Chicken Soup,	6d
" Pork,	6d	Beef Soup,	6d
" Fish,	6d	Coffee,	6d

Dessert.

Suet Pudding	6d	Mince Pie,	6d
Indian Pudding,	6d	Apple Pie,	6d
Rice Pudding,	6d	Peach Pie,	6d
Plum Pudding,	6d	lum Pie,	6d
Bread Pudding,	6d	umpkin Pie,	6d
Apple Dumplings,	6d	Custard Pie,	6d

Breakfast and Tea.

Beef Steak,	6d	Hot Corn Bread,	6d
Veal Pie,	6d	Indian Cakes,	6d
Mutton Chops,	6d	Boiled Eggs,	6d
Ham and Eggs,	12d	Fried Eggs,	6d
Fried Tripe,	6d	Toast,	6d
Fried Sausages,	6d	Hot Muffins,	6d
Fried Fish,	6d	Hot Rolls,	6d
Fried Clams,	6d	Tea,	3d
Fried Liver,	6d	Coffee,	3d



AT HENRY ROWNTREE'S old established *Tool Store*, at the Corner of Chambers and Chatham streets, Mechanics, Farmers, &c., will find an assortment of good Tools, suitable for almost every branch of trade.

H. R. feels obliged to his many customers, of every class, for their past patronage and hereby assures them that no pains shall be spared to procure the best articles in all variety.

H. R. has a greater part of his goods made expressly for him, and Mechanics, &c., may place confidence in them, having had the gold medal awarded him, at the late Fair, for the best tools.

First rate Razors; Pen and Pocket Knives; Table Knives and Forks, &c.

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ROGERS & SEALEY

Are prepared, with all the improvements in the art of Daguerreotyping, to execute PORTRAITS in a beautiful and finished style.

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They use the best German Camera, which is considered superior to any other, in giving life and sharpness to the expression of the eye. They have their rooms properly lighted, and in every way adapted to the business.

Copies taken of Portraits, Miniatures, Engravings, &c. &c.

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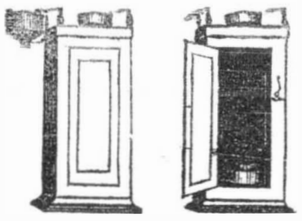
Colored do. do. do. $1 50.

Persons are invited to call and see their own

PORTRAITS,

IN DAGUERREOTYPE,
to purchase or not, at their pleasure. may6.



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THE subscriber has the satisfaction to announce to the public, that he has perfected, and is prepared to furnish at short notice, a portable shower-bath, far superior in utility and convenience of management, to anything of the kind hitherto offered. It constitutes a light and genteel article of furniture for a bed-chamber, and so perfectly constructed, that either a lady or gentleman can at any moment enjoy a copious shower without the id of servants, and withodt having a drop of the water sprinkled on the carpet or floor. And by a slight change in a part of the apparatus, the same may be converted to a steam-bath, either plain or aromatic. These baths are manufactured and may be examined at No. 31 Ann st. JOHN LOCKE.
Dec 4.

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Pictorial History of the Revolution,
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Book-binding,

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Persons collecting six copies of this Bible, and forwarding them to the subscriber, with directions, will receive the binding of one copy gratis.

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*** Country newspapers, copying the whole of this advertisement, and giving it six inside insertions, shall be entitled to a copy of any one of the above works,—all who may comply with the above terms, will please send a copy of the paper, each time of insertion, to the publisher, E. WALKER, 114 Fulton st., New York.
Feb11tf.

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of four sides.
Also, Pocket Books, Wallets, &c.
On the most extensive scale.

L. C.'s facilities for manufacturing Pocket Books, or Wallets, for the supply of those wholesale dealers who buy to sell again by the gross or dozen, are unequalled, he having employed for the last ten years from 50 to 270 workmen. His present well regulated system of *division of labor*, enables him to supply these articles at a very great reduction, at least one third less than former prices.

Strops retailed at from 50 cents to $1,00 each, varying only in outward finish and size—warranted to please or the money returned. jan22.

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